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ABSTRACT

Twenty English-Japanese bilingual subjects were given the following reading tasks: timed, silent reading of passages in English and Japanese followed by comprehension tests and recognition of tachistoscopic presentations of twenty words in each language. The amount of reading the subjects had done in English and Japanese was assessed in an interview. Reading efficiency was determined by multiplying the number of words per minute by the per cent of correct responses on the comprehension test. More efficient readers scored higher on immediate word recognition and it was found that both reading efficiency and immediate word recognition were related to the amount of reading the subjects had done in the language. (CFM)

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Some Observations of Reading Behavior of English-Japanese Bilinguals

Bonnie Davis Araman

After years of debate over "Why Johnny Can't Read" a multitude of methods have been developed to introduce the concept of reading to children in the primary grades. These approaches range from phonics, which emphasizes the relationship between the written symbols and the sounds of the language, to language experience, which stresses the importance of the child communicating his thoughts in writing. Today most primary teachers and many materials writers realize the need for pupils to gain meaning from reading as well as to be able to pronounce the written words.

In contrast to all the fanfare over first language reading instruction, very little has been said about reading a second language. Prior to the shift to audio-lingual language classes, "reading" the foreign language was, in many cases, equated with translating from the foreign language to the native language. The audio-lingual programs brought with them special alphabets and romanizations of foreign scripts which enabled learners to pronounce new words.[1] When a foreign language used the same script as the native language, it was assumed that the students already knew how to read and only explanations of the different sound-symbol correspondences were given.[2] However, if a new script was involved, many programs did not introduce reading of the actual script until after the students had gained some proficiency through the transcription. Then, symbols of the actual script were taught by equating them with symbols in the transcription. Foreign texts for English as a second language present English words and phrases in standard orthography from the beginning but leave the grammatical explanation and meaning of new terms in the native language.[3]

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The purpose of this study is to discover and describe differences which exist in the reading behavior of a bilingual when he reads his first and second language. The most obvious difference is the slow pace to which the second language reader feels restricted. Also, while they may tolerate a certain amount of vagueness in their comprehension of the second language when it is spoken, many readers seem determined to decode and understand every wiggle of a foreign script.

The study conducted by Scherer and Wertheimer (1964) comparing the audio-lingual method with the grammar-translation method indicated that students learn what they are taught, but in the case of reading a second script it appears that they may need to learn more than they are taught. If he actually wants to be able to read the language, a student who learns via transcription must eventually learn to read the actual script. Students who master the symbol-sound relationships must also learn the meaning behind their utterances. If students wish to become biliterate as well as bilingual, they must acquire skill in reading whole words and phrases.

The fact that some languages are written in scripts which are alphabetic or syllabic while other scripts are logographic does not affect the process of reading. "The general nature of the reading act is essentially the same among all mature readers.....At each fixation (the reader) recognizes words as wholes, that is by their general form and striking characteristics. As a rule, two or three words are recognized at each fixation of the eyes." (Gray, 1958 p. 59)

Consequently, the reading process is not a simple decoding process from symbols to sounds. We do not wait until after we have heard ourselves pronounce a word to understand what we have read. Indeed, Chomsky and Halle (1968) claim that we cannot read aloud without first acquiring

the meaning of what we are reading. Several studies of reading tachistoscopic presentations demonstrate that fluent readers easily identify words when there is not sufficient time to identify every letter (Smith, 1971). Goodman and Flemming (1969) point out that even reading whole words does not make one a fluent reader since it is necessary to make associations on higher levels in order to get the meaning from a text. This concept is dramatized by Reed (1965, p. 847) when he shows that one can pronounce a sentence by identifying the words and linguistic forms and yet be unable to paraphrase it. According to Reed, both the written and spoken symbols are linked to linguistic forms which in turn are related to meaning. The written symbols, or graphs, do not represent sounds; both sounds and graphs represent meaning.

A related issue is discussed by Carol Chomsky in "Reading, Writing and Phonology" (1970). She describes the spelling of English as lexical spelling which preserves the relationship of variant forms of the same word though their pronunciation may differ. In this way, English orthography represents the abstract underlying forms and does not indicate phonetic variation which is predictable by a general rule.

It is interesting to note that native speakers of English and learners of English as a second language do not seem to have an internalized set of phoneme-grapheme correspondences which enable them to spell English words. A study by Brown (1970) suggests that native and foreign spellers of English have learned words as units and not as strings of predictable graphemes.

One reason for teaching the phoneme-grapheme correspondences was their supposed usefulness in "reading" new words. As the definition of reading is expanded to include getting the meaning from printed matter,

these correspondences lose some of their importance. Students trained to pronounce new words need additional skills to enable them to determine the meaning from context.

A reference to the fact that Japan has a low rate of illiteracy due to the syllabary and logographs could not be investigated by this author because the article appeared in a journal which is unavailable. (Makita, 1968) However, the success of a study in which American children with reading problems were taught to read English represented by Chinese characters may indicate that the problems were caused by the reading teachers' emphasis on phoneme-grapheme correspondences. (Rozin, Poritsky and Sotsky, 1971)

Factors which have been shown to be important in learning to read a second language are: the learner's knowledge of the language and his previous literacy. Frank Smith has proposed "that the actual marks on a printed page are relatively less important than the knowledge of the language that a skilled reader has before he even opens the book," and "that the information that passes from the brain to the eye is more important in reading than the information that passes from the eye to the brain." (Smith, 1971 p. 9) He goes on to explain that a fluent reader is able to comprehend immediately from the distinctive features of a word by using his knowledge of the regularities of the language and its redundancy. Also, if the learner is already literate in his native language "there are a number of similarities which exist among human speech and written languages which may provide positive transfer value to new language learners." (Thonis, 1970 p. 118) A literate learner already knows how to read and understands the relationship between print and speech but he must learn to read a second writing system.[4]

On the basis of the above information two hypotheses were made: 1. Efficient reading will be accompanied by skill in immediate word recognition. 2. Efficient reading and immediate word recognition are a function of the amount of reading. Fluent reading does not allow for letter by letter decoding; rather it implies immediate word recognition and comprehension. It is assumed that one gains knowledge of the language by studying, reading and using it and the amount of such activity should be a factor in improvement.

Some of the terms which are used in this study are operationally defined as follows:

Reading efficiency - the number of words per minute times the percent of correct responses on the comprehension test. (Miller, 1956)

Immediate word recognition - ability to name words aloud after viewing them on the Electro-tach (flasher).[5]

Amount of reading - number of years reading the language plus the frequency of present reading. The E evaluated the information provided by the subjects and quantified it as follows: one point for each five years of exposure to the written language and one point for occasional reading, two points for moderate and three points for frequent reading.

The results of this study should answer some questions about the reading behavior of bilinguals. Since the motivation of an adult learner and very often the time allowed for him to learn a second script are different from those of primary school children, it is important to discover:

What skills transfer from knowledge of the reading process?

What habits interfere with second script acquisition?

How are native language skills correlated with second language skills?

What techniques are best for teaching the needed skills?

Unlike the Americans, the correlations for the Japanese reading English were all quite significant. In this group there was a wide in-group variation in amount of reading, word recognition and efficiency so the correlations show in spite of the small number of subjects.

CONCLUSION AND IMPLICATIONS

The fact that even those subjects who had low reading efficiency in their second language could recognize words in that language when they were flashed on the Electro-Tach indicates that they were able to read some whole words. There was no time to decode the words letter by letter. An analysis of the errors which were made is not within the scope of this paper but, briefly, they suggest that the subjects saw shapes and named words with similar shapes. Many of them identified the words correctly but stated that they had not read each letter. Even the American subjects possessed enough knowledge of Japanese to guess that the one word with some *katakana* was a foreign word.

The slow speed of the second language reading implies that the subjects were reading the passages in the manner which they had been taught - symbol by symbol. They did not use the eye movement which they used while reading their native languages. Few of the students enjoy reading in the second language and many reported that they disliked the beginning reading classes. None of the subjects had ever been given any instruction designed to increase reading speed or to improve their comprehension of extensive silent reading. Most of the Japanese subjects reported that they read faster in Japanese because they looked only at the *kanji* and didn't really look at the rest. No one had told them that it was possible to do the same thing in English (from content word to content word). Indeed, many of the American readers were unaware that they did so when reading English.

English and Japanese, the languages used in this study, may have a unique relationship to each other but the results should suggest trends which generalize to other languages and writing systems. The effectiveness of various teaching methods now being used to instruct learners of new scripts should be researched further.

METHOD

Subjects The twenty subjects for this study were Japanese-English bilinguals who are presently affiliated with the University of Hawaii. Half of them learned to read English first and later learned to read Japanese. Conversely, the other half learned to read Japanese first and after the age of twelve began to learn English. The groups were balanced by sex and age.[6]

Task Part of Kawabata Yasunari's short story "The Moon on the Water" and its translation by E. Seidensticker (1970) was selected because its vocabulary seemed frequent and relatively few *kanji* were present in the Japanese version. The text was divided into two parts of approximately 350 words each. Both halves were printed in both languages on single sheets of white 8 1/2 X 11 inch paper. An attempt was made to keep the borders equal and the size of the type the same in spite of the difference in script. The four sheets were covered with plastic protective film so that they could be handled without being damaged.

A comprehensive quiz was written for each half and the questions were translated into Japanese.[7] Each quiz contained one multiple choice and four true-false questions. The quizes were duplicated and presented on half sheets of paper.

Twenty words in Japanese were selected from a frequency list of the 12,000 words which appear most frequently in Japanese periodicals

(Kokuritsu Kokugo Kenkyuusho, 1964). Only those words which are normally written in *hiragana* were selected in order to equate their visual length with that of English words. Five words were chosen at each of four lengths - three, four, five and six *kana*. Next, English words were selected from a rank frequency list of English words appearing in American periodicals (Kučera and Francis, 1967). English words were chosen by matching the frequency rank with the Japanese words and then choosing the closest word of the proper length.

Procedure Alternate subjects were given the English version first and the others began with Japanese. They were instructed to read the passage carefully but comfortably. They were informed that time was being kept in order to compare their rate of reading the native language with that of reading the second language. They were told that a quiz followed and that it was general and easy. When they finished the first half they were given the quiz on that half in the language in which they had read it. They were all told that they were doing well. Then they were given the second half and the quiz in the other language. After finishing the second quiz, they were introduced to the Electro-Tach. They were allowed to flash the practice frame as many times as they wanted to until they felt comfortable with the viewer. The first set of cards was in the language of the last reading. The first four words were presented for one second each and the remaining words were presented four each at 1/10th, 1/25th/ 1/50th and 1/100th of a second. The first word of each set of four was three letters (*kana*) long and frequent, the second word was four letters long and less frequent, etc. The subjects identified the words by reading them aloud. If they were unable to recognize the word, they sometimes flashed it again but only the first flash

was counted. The second set of words in the other language was presented in the same manner.

All subjects were questioned about their reading history and the frequency with which they read in each language in the past and presently. A complete questionnaire on their language background was completed if this information was not already on file.[8]

RESULTS AND DISCUSSION

The two groups of bilinguals were not significantly different in their native language skill nor their second language skill, but they were significantly different when native speaker ability was compared to foreign speaker ability in both languages. Also, there were significant differences in each group's native language skill and their foreign language skill. Table 1 summarizes this information.

Table 1

Comparison of Mean Efficiency Scores

Groups Compared	t	Significance
A-Eng / J-Jpnse	1.47	none
A-Jpnse/ J-Eng	.84	none
A-Eng / J-Eng	8.81	$p < .001$
A-Jpnse / J-Jpnse	6.34	$p < .001$
A-Eng / A-Jpnse	11.67	$p < .001$
J-Eng / J-Jpnse	5.20	$p < .001$

A= American native speakers of English Eng= English efficiency

J= Japanese native speakers of Japanese Jpnse= Japanese efficiency

The means for both groups on all of the measures are presented in Table 2. For both groups the time necessary to read 350 words[9] in the foreign language was a little over three times that needed to read the native language. However, on the average, American students read English four and a half times more efficiently than they read Japanese while Japanese subjects were little more than three times more efficient in reading Japanese than in reading English.

The lower percentage of correct responses from both groups on the recognition of Japanese words is perhaps due to the fact that all of the words were written in *hiragana*. Usually, content words in Japanese are written in *kanji*. The results may have been different if frequent *kanji* had been used. It has also been suggested that the Japanese frequency list was based on more scientific publications than the English frequency count. Another factor is the difference in script representation. Since *hiragana* symbols represent a consonant-vowel combination the Japanese words were three to six syllables long whereas the English words were only one to three syllables long.[10] Matching Japanese words with English words with the same number of syllables could produce different results.

The differences in the amount of reading reflect the fact that the Japanese subjects are enrolled in courses at the University of Hawaii where English is the medium of instruction. Many of the American subjects read Japanese only in their foreign language classes.

Table 2

Mean Scores on Reading Tasks

Language	Measure	Americans	Japanese
ENGLISH	Time	1:07 min.	3:58 min.
	WPM	327	116
	Comprehension	84%	62%
	Efficiency	220	74
	Recognition	95%	80%
	Amount	7.4	5.4
JAPANESE	Time	3:34 min.	1:26 min.
	WPM	102	286
	Comprehension	60%	84%
	Efficiency	60	226
	Recognition	60%	85%
	Amount	4	6.6

Table 3 shows the correlations of reading efficiency, immediate word recognition and amount of reading for Americans, Japanese and the total group. The significance of each correlation is also indicated.[11]

Table 3

Correlations between Reading Tasks

	Americans		Japanese		Total	
	r	p<	r	p<	r	p<
E amt/E eff	.25	-	.68	.05	.70	.001
E eff/E rec	.52	*	.83	.01	.56	.01
E amt/E rec	.27	-	.72	.02	.68	.001
J amt/J eff	.26	-	.30	-	.68	.001
J eff/J rec	.12	-	.61	*	.60	.01
J amt/J rec	.63	*	.58	*	.54	.02

E= reading English
J= reading Japanese

amt= amount
eff= efficiency
rec= recognition

r= correlation
p= probability
*= approaches .05

If we consider the results for the total group, the high correlations and low probability that these results were obtained by chance tend to confirm both hypotheses: 1. Efficient reading is accompanied by skill in immediate word recognition. 2. Efficient reading and immediate word recognition are a function of amount of reading. However, significant correlations are not shown for the individual groups when reading their native language nor for the Americans reading Japanese. Obviously the small size of the sample is a major cause for failure to reach significance.

The correlation between English efficiency and English word recognition for both groups and between Japanese efficiency and Japanese word recognition for the Japanese support the hypothesis that efficient reading is accompanied by skill in immediate word recognition. The low correlation between Japanese efficiency and Japanese word recognition may be due to the fact that efficient reading in Japanese requires knowledge of *kanji* not just the *hiragana* which was used in the tachistoscopic presentations.

The correlations between amount of Japanese reading and immediate recognition of Japanese words were almost significant for both groups. Perhaps the low correlation between amount of English reading and immediate recognition of English words for Americans is explained by the fact that there was very little variance in the word recognition scores. Had longer words or phrases been used the correlations may have been more significant.

It is interesting to note that the amount of reading Japanese is not significantly correlated to Japanese reading efficiency for either sub-group. A look at the raw data indicates that some of the Americans have learned to read in a short time while others have been exposed to reading for a long time but they have not been required to read extensively. Many of the Japanese have not been using their language for reading or writing in the past few years and therefore they no longer read efficiently.

Apparently the skill of reading phrases does not automatically transfer and should, therefore, be taught. Materials designed to do so are available for native speakers of English (Miller, 1964) and some have been prepared for speakers of English as a second language (Harris, 1966 and Yorkey, 1970). Such material should enable students to become more fluent readers of second scripts. In addition to cues to grapheme-phoneme correspondences, a reading course should include silent reading, practice in reading whole words, practice in reading phrases or thought groups, guidance in guessing meaning from context and extensive exposure to the written language.

NOTES

[1]Examples of this type are: *Learn Japanese* by John Young and Kimiko Nakajima, Honolulu: University Press of Hawaii, 1967, and *A Sequential Course in Thai* by Dale Crowley, Hilo: University of Hawaii Peace Corps Project, 1966.

[2]Typical examples are: *Le Francais pour Debutants* by Morris A. Springer, Lexington, Massachusetts: Xerox College Publishing, 1972 and *Beginning College Spanish* by John Dalbor, New York: Random House, 1972.

[3]Two of these are: *Modern American English* by Robert Dixson, Tokyo: Grolier International, Inc., 1970, and *Patterned Composition Through Pictures* by Department of Education, Bangkok, Thailand.

[4]Thonis goes on to contradict this statement, so this quotation is somewhat out of context.

[5]The tachistoscope presentations were presented on cards in a Lafayette Electro-Tach, Model 2500.

[6]Three additional subjects were tested but eliminated from the sample. One failed to adjust the Electro-Tach to the correct speed; two did not demonstrate proficiency in their native language perhaps due to their failure to understand the instructions in English and the inability of the E to give them in Japanese.

[7]A problem in the translation of one question was pointed out by one of the subjects. The word used for *worm* in the text was not the same as that used in the quiz. Only native speakers of Japanese reacted to this difference and only half of them read that part in Japanese. When they questioned the translation, they were told it should have been the same.

[8]This study was carried out in conjunction with other projects on Japanese-English bilingualism. Some of the subjects served in more than one experiment and therefore had interview data on file.

[9]Since it is difficult to get agreement on the number of words in a Japanese text, it was assumed that the translation had an equal number of words as the original text. Payment for translation to or from Japanese is often handled by setting a price per word and counting the English words.

[10]The term *mora* is usually used instead of syllable when referring to Japanese but the difference in definition is not critical to the matter in question.

[11]All correlations and t-tests results were computed on an Olivetti Programma 1001.

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